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10/560,340	12/12/2005	Masumi Kubo	4034-84	9169

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EXAMINER	
CHIEN, LUCY P	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/560,340	KUBO ET AL.	
	Examiner	Art Unit	
	LUCY P. CHIEN	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 April 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) *13 and 14* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8-12 and 15-33* is/are rejected.

7)☒ Claim(s) *7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12/12/2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Arguments

Applicant's arguments with respect to claim 1-7,8-12,15-33 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Claim 1-5,11,12,15.,29,30,31 rejected under 35 U.S.C. 103(a) as being obvious over Kubo et al (US 20030107695) in view of Kaneko et al (US 5777700).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing

that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Regarding Claim 1,29,

Kubo et al discloses (Fig. 33A, 33B) a first substrate (11), a second substrate (21), and a liquid crystal layer (30) provided between the first substrate and the second substrate; the liquid crystal display device having a plurality of picture element regions (14); wherein: the first substrate (11) includes a picture element electrode (14) provided on the side of the liquid crystal layer, the picture element electrode being provided in each of the plurality of picture element regions, and a switching device [0161] electrically connected to the picture element electrode [0161]; the second substrate includes a counter electrode (22) opposing the picture element electrode with the liquid crystal layer interposed there between; and in each of the plurality of picture element regions, the picture element electrode includes a solid area (14b) including a plurality of unit solid areas; and the liquid crystal layer is in a vertical alignment (abstract) when no voltage is applied between the picture element electrode and the counter electrode, and when a voltage is applied between the picture element electrode and the counter electrode, forms a liquid crystal domain taking a radially-inclined orientation in a region corresponding to each of the plurality of unit solid areas by an oblique electric field produced in the vicinity of each of the plurality of unit solid areas of the picture element electrode; the liquid crystal display device further comprising, in each of the plurality of picture element regions, a storage capacitance (17) connected electrically in parallel to a liquid crystal capacitance which includes the picture element electrode, the counter

electrode, and the liquid crystal layer; wherein in each of the plurality of picture element regions, the first substrate (11) has an area where no solid area (14a) of the picture element electrode is provided; and at least a part of the storage capacitance (17) is located in the area of the first substrate where no solid area (14a) is provided. A storage capacitor line extends in a direction such that a central elongated portion corresponding to a central portion of at least part of the storage capacitor line is aligned in the area where no solid area is provided

Kubo et al does not disclose the central elongated portion of the storage capacitor line is not aligned to overlap with any significant parts of the unit solid portions areas.

Kaneko et al (Fig. 41A) discloses the central elongated portion of the storage capacitor line (135) is not aligned to overlap with any significant parts of the unit solid portions areas (134,136,137).

It would have been obvious to one of ordinary skill in the art to modify Kubo et al to include Kaneko et al's storage capacitor line to not overlap significant part of the unit solid portion areas motivated by the desire to attain a viewing angle characteristic corresponding to the voltage applied to the liquid crystal area, Therefore obataining good viewing angle characteristics.(column 2, rows 40-45)

Regarding Claim 2,30,

In addition to Kubo et al and Kaneko et al as disclosed above, Kubo et al discloses (Fig. 33A, 33B) switching device is a thin film transistor [0161].

Regarding Claim 3,31,

In addition to Kubo et al and Kaneko et al as disclosed above, Kubo et al discloses (Fig. 33A, 33B) wherein the storage capacitance (17) includes a storage capacitance line, a storage electrode opposing the storage capacitance line and electrically connected to a drain electrode of the thin film transistor, and a first insulating layer (not shown, but exists in this invention to complete a storage capacitor) provided between the storage capacitance line and the storage electrode[0161].

Regarding Claim 4,,

In addition to Kubo et al and Kaneko et al as disclosed above, Kubo et al discloses (Fig. 33A, 33B) wherein at least a part of the storage capacitance line (17), at least a part of the storage electrode, and at least a part of the first insulating layer are located in the area.

Regarding Claim 5,

In addition to Kubo et al and Kaneko et al as disclosed above, Kubo et al discloses (Fig. 33A, 33B) wherein the first substrate includes a scanning line electrically connected to a gate electrode of the thin film transistor and a signal line electrically connected to a source electrode of the thin film transistor [0161].

Regarding Claim 11,

In addition to Kubo et al and Kaneko et al as disclosed above, Kubo et al discloses (Fig. 33A, 33B) wherein the plurality of unit solid areas each have a shape having rotational symmetry.

Regarding Claim 12,

In addition to Kubo et al and Kaneko et al as disclosed above, Kubo et al discloses (Fig. 33A, 33B) wherein the plurality of unit solid areas each have a generally circular shape.

Regarding Claim 15,

In addition to Kubo et al and Kaneko et al as disclosed above, Kubo et al discloses (Fig. 33A, 33B) wherein the plurality of unit solid areas have substantially the same shape and substantially the same size as one another, and form at least one unit lattice arranged to have rotational symmetry.

Regarding Claim 16,

In addition to Kubo et al and Kaneko et al as disclosed above, Kubo et al discloses (Fig. 33A, 33B) wherein the picture element electrode further has at least one opening, and the liquid crystal layer forms a liquid crystal domain taking a radially-inclined orientation in a region corresponding to the at least one opening by the oblique electric field when a voltage is applied between the picture element electrode and the counter electrode.

Regarding Claim 17,

In addition to Kubo et al and Kaneko et al as disclosed above, Kubo et al discloses (Fig. 33A, 33B) wherein the at least one opening includes a plurality of openings having substantially the same shape and substantially the same size as one another, and at least a part of the plurality of openings forms at least one unit lattice arrange to have rotational symmetry.

Regarding Claim 18,

In addition to Kubo et al and Kaneko et al as disclosed above, Kubo et al discloses (Fig. 33A, 33B) wherein each of the at least the part of the plurality of openings has a shape having rotational symmetry.

Regarding Claim 19,

In addition to Kubo et al and Kaneko et al as disclosed above, Kubo et al discloses (Fig. 33A, 33B) wherein each of the at least the part of the plurality of openings has a generally circular shape.

Regarding Claim 20,,

In addition to Kubo et al and Kaneko et al as disclosed above, Kubo et al discloses (Fig. 33A, 33B) wherein in each of the plurality of picture element regions, a sum of area sizes of the plurality-of openings of the picture element electrode is smaller than an area size of the solid area of the picture element electrode.

Regarding Claim 21,

In addition to Kubo et al and Kaneko et al as disclosed above, Kubo et al discloses (Fig. 26a,26b) a protrusion(408) provided in each of the plurality of openings (14a) of the picture element electrode, wherein the protrusion has the same cross-sectional shape as that of the plurality of openings in a planar direction, and a side surface of the protrusion exerts an orientation-regulating force acting upon the liquid crystal molecules in the liquid crystal layer in the same direction as an orientation-regulating direction provided by the oblique electric field.

Regarding Claim 22,

In addition to Kubo et al and Kaneko et al as disclosed above, Kubo et al discloses (Fig. 33A, 33B) wherein the second substrate has an orientation-regulating structure (28) in an area corresponding to each of the plurality of unit solid areas (14b), the orientation-regulating structure exerting an orientation-regulating force for placing the liquid crystal molecules in the liquid crystal layer into a radially-inclined orientation at least in a state where a voltage is applied between the picture element electrode and the counter electrode.

Regarding Claim 23,

In addition to Kubo et al and Kaneko et al as disclosed above, Kubo et al discloses (Fig. 33A, 33B) wherein the orientation-regulating structure (28) is provided in an area corresponding to a central portion of each of the plurality of unit solid areas (14b) or the vicinity thereof.

Regarding Claim 24,

In addition to Kubo et al and Kaneko et al as disclosed above, Kubo et al discloses (Fig. 33A, 33B) wherein in the liquid crystal domain formed in correspondence with each of the plurality of unit solid areas (14b), the orientation-regulating direction provided by the orientation-regulating structure is in conformity with the direction of the radially-inclined orientation provided by the oblique electric field.

Regarding Claim 25,

In addition to Kubo et al and Kaneko et al as disclosed above, Kubo et al discloses (Fig. 33A, 33B) wherein the orientation-regulating structure exerts an orientation-regulating force even in a state where no voltage is applied between the picture element electrode and the counter electrode.

Regarding Claim 26,

In addition to Kubo et al and Kaneko et al as disclosed above, Kubo et al discloses (Fig. 33A, 33B) wherein the orientation-regulating structure is a protrusion included in the counter substrate (28a) and protruding toward the liquid crystal layer.

Regarding Claim 27,

In addition to Kubo et al and Kaneko et al as disclosed above, Kubo et al discloses (Fig. 33A, 33B) wherein a part of the storage capacitance (17) overlaps the orientation-regulating structure (28).

Regarding Claim 28,

In addition to Kubo et al and Kaneko et al as disclosed above, Kubo et al discloses (Fig. 33A, 33B) wherein the liquid crystal domain takes a spiral radially-inclined orientation.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 6,8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo et al (US 20030107695) and of Kaneko et al (US 5777700).in view of Hayashi (US 6115089).

Regarding Claim 6,

Kubo et al and Kaneko et al disclose everything as disclosed above.

Kubo et al and Kaneko et al do not disclose the storage capacitance line includes at least one line stem extending generally parallel to the scanning line and a line branch branched from the at least one line stem; and the storage electrode includes at least one electrode stem opposing the at least one line stem with the first insulating layer interposed therebetween and an electrode branch branched from the at least one electrode stem.

Hayashi discloses (fig. 3) the storage capacitance line (161) includes at least one line stem (161a) extending generally parallel to the scanning line and a line branch branched from the at least one line stem; and the storage electrode includes at least one electrode stem opposing the at least one line stem with the first insulating layer interposed therebetween and an electrode branch branched from the at least one electrode stem.

It would have been obvious to one of ordinary skill in the art to modify Kubo et al and Kaneko et al's display to include Hayashi's branched storage capacitor motivated by the desire to shield electric flux lines between the signal line (103) and transparent pixel electrode (151)(column 7, rows 37-42).

Regarding Claim 8

In addition to Kubo et al, Kaneko et al, and Hayashi as disclosed above, Hayashi discloses (Fig. 3) wherein the at least one line stem is a plurality of line stems (one on the left and one on the right of the pixel electrode (151)), and the at least one electrode stem is a plurality of electrode stems.

Claim 9,10,32,33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubo et al (US 20030107695) and of Kaneko et al (US 5777700). in view of Numano et al (US 20010048499)

Regarding Claim 9,10,32,33

Kubo et al and Kaneko et al disclose everything as disclosed above.

Kubo et al and Kaneko et al do not disclose the first substrate further includes a second insulating layer for covering at least the thin film transistor and the storage electrode; and the picture element electrode is provided on the second insulating layer.

Numano et al discloses (Fig. 9b) the first substrate further includes a second insulating layer (10) covering at least the thin film transistor (2) and the storage electrode (3); and the picture element electrode (12) is provided on the second insulating layer (10) wherein the second insulating layer is formed of a resin material.

It would have been obvious to one of ordinary skill in the art to modify Kubo et al and Kaneko et al's display to include Numano et al's first substrate further includes a second insulating layer (10) covering at least the thin film transistor (2) and the storage electrode (3); and the picture element electrode (12) is provided on the second insulating layer (10) motivated by the desire to provide an active substrate to complete the liquid crystal display. [0004]

Allowable Subject Matter

Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding Claim 7,

The prior art does not disclose the line branch and the electrode branch are branched so as to overlap a central portion of one of the plurality of unit solid areas or the vicinity thereof.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LUCY P. CHIEN whose telephone number is (571)272-8579. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571)272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Lucy P Chien
Examiner
Art Unit 2871

/David Nelms/
Supervisory Patent Examiner, Art Unit 2871